CLAIM AMENDMENTS

1. (Currently Amended) A spatial light modulator comprising:

a multi-pixel display array; and

a multi-pixel memory array having pixel storage cells;

wherein at least some pixels of the multi-pixel memory array are disposed outside the display array such that the multi-pixel memory array is physically decoupled from the multi-pixel display array.

2. (Original) The spatial light modulator of claim 1 wherein all of the pixels of the memory array are disposed outside the display array.

3. (Currently Amended) The spatial light modulator of claim 1 further comprising:

at least one local pulse width modulation drive circuit coupled to at least one of the pixel storage cells; and[[.]]

a global counter coupled to the local pulse width modulation drive circuit.

4. (Original) The spatial light modulator of claim 3 wherein:

the display pixels of the multi-pixel display array comprise first display pixels of a first color, and second display pixels of a second color;

the global counter includes,

a first global counter coupled to the local pulse width modulation drive circuits of the first display pixels, and

a second global counter coupled to the local pulse width modulation drive circuits of the second display pixels.

5. (Original) The apparatus of claim 4 wherein:

the display pixels of the multi-pixel display array further comprise third pixels of a third color.

6. (Original) The apparatus of claim 5 wherein:

the global counter further includes,

a third global counter coupled to the local pulse width modulation drive circuits of the third display pixels.

7. (Original) The apparatus of claim 3 wherein:

the multi-pixel display array includes display pixels of at least two different colors; and

the global counter is adapted to count up to two respective different values and is switcheably coupled to the respective different color display pixels to provide global counter values to their local pulse width modulation drive circuits in a time-slice manner.

8. (Original) The apparatus of claim 7 wherein:

the multi-pixel display array includes display pixels of three different colors.

9. (Original) The apparatus of claim 8 wherein:

the three colors are Red, Green, and Blue.

10. (Currently Amended) A spatial light modulator comprising:

control logic;

a pixel memory array coupled to the control logic and occupying a first area of the spatial light modulator; and

a pixel display array coupled to the control logic and the pixel memory array, and occupying a second area of the spatial light modulator, wherein the first and second areas are physically decoupled and substantially non-overlapping.

11. (Original) The spatial light modulator of claim 10 wherein:

the pixel display array comprises a plurality of pixel display cells, each having disposed within its area an associated pulse width modulation driver circuit; and

the pixel memory array comprises a plurality of pixel memory cells.

12. (Original) The spatial light modulator of claim 11 wherein:

the control logic comprises a counter for providing a count value;

the pulse width modulation driver circuit comprises a comparator coupled to compare the count value to a pixel value stored in an associated pixel array cell of the pixel memory array.

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13. (Original) The spatial light modulator of claim 12 further comprising:

means for providing non-linearity in the pulse width modulation.

14. (Original) The spatial light modulator of claim 11 wherein the pixel memory array comprises:

more memory cells than the pixel display array has pixel display cells; and

means for providing redundancy in the pixel memory array.

15[[20]]. (Currently Amended) A method of manufacturing a light modulator, the method comprising:

constructing, in a first area of the light modulator, a pixel display array including multiple display pixels; and

constructing, in a second area of the light modulator that is physically decoupled and substantially non-overlapping with the first area, a pixel memory array including multiple pixel storage cells.

16[[21]]. (Currently Amended) The method of claim 15 [[20]] further comprising:

constructing, within each of a plurality of the display pixels, a pulse width modulation driver circuit.

17[[22]]. (Currently Amended) The method of claim 16 [[21]] further comprising:

constructing a counter having an output coupled to each of the plurality of display pixels;

constructing, within each of the pulse width modulation driver circuits, a comparator having a first input coupled to the output of the counter and a second input coupled to receive a pixel data value from the pixel memory array.

18[[23]]. (Currently Amended) The method of claim 17[[22]] wherein constructing the comparator comprises:

configuring the comparator to determine whether the pixel data value is greater-than-or-equal-to the counter output.

19[[24]]. (Currently Amended) The method of claim 18[[23]] further comprising:

constructing a lookup table to provide non-linear response in the pulse width modulation.

20[[25]]. (Currently Amended) The method of claim 19[[24]] performed in an order as recited.

21[[30]]. (Currently Amended) A method of operating a light modulator, the method comprising, for each respective pixel cell in a plurality of pixel cells in a pixel display array:

performing a digital function on a pixel data value and a present counter value to generate one of a first result or a second result wherein a pixel memory array is physically decoupled from the pixel display array to hold the pixel data value; and

in response to the first result, activating the pixel cell;

in response to the second result, deactivating the pixel cell.

22[[31]]. (Currently Amended) The method of claim 21[[30]] wherein:

the digital function comprises a comparison.

23[[32]]. (Currently Amended) The method of claim 21[[30]] further comprising, over time:

incrementing the counter value from 0 to N-1, wherein N is a number of bits of color depth represented in the pixel data value; and then

wrapping back to 0.

24[[33]]. (Currently Amended) The method of claim 21[[30]] further comprising:

detecting that a pixel memory cell in the [[a]] pixel memory array is not operating correctly; and, responsively

logically replacing that pixel memory cell with a redundant memory cell.

25[[34]]. (Currently Amended) The method of claim 21[[30]] further comprising:

performing non-linear pulse width modulation.

26[[35]]. (Currently Amended) The method of claim 21[[30]] wherein:

the digital function is performed outside the pixel cell.

27[[36]]. (Currently Amended) The method of claim 21[[30]] wherein:

the digital function comprises using the present counter value to index into a lookup table.

28[[40]]. (Currently Amended) A display device comprising:

a display including a first plurality of pixel display cells;

each of the first plurality of pixel display cells including,

(1) an electrode,

(2) a phase modulation driver circuit coupled to drive the electrode, and including,

(A) a comparator coupled to receive a counter value and a pixel value from outside the pixel display cell, and

(B) a multi-bit pixel value storage physically decoupled from the first plurality of pixel display cells.

29[[41]]. (Currently Amended) The display device of claim 28[[40]] wherein the display further includes:

a second plurality of pixel display cells, each of which includes,

(1) an electrode,

(2) a phase modulation driver circuit coupled to drive the electrode, and including,

(A) a multi-bit pixel value storage, and

(B) a comparator coupled to receive a counter value, and coupled to receive a value stored by the multi-bit pixel value storage.

30[[42]]. (Currently Amended) The display device of claim 29[[41]] wherein the second plurality of pixel display cells each further includes:

(C) a second multi-bit pixel value storage coupled to provide the pixel value to a comparator in the phase modulation driver circuit of one of the first plurality of pixel display cells.

31[[43]]. (Currently Amended) The display device of claim 28[[40]] wherein the display device is a silicon light modulator.

32[[44]]. (Currently Amended) The display device of claim 28[[40]] wherein the display device is a liquid crystal display.

33[[45]]. (Currently Amended) The display device of claim 28[[40]] wherein the display device is a plasma display panel.

34[[50]]. (Currently Amended) A projection device comprising:

a polarization beam splitter; and

a first light modulator coupled in optical contact with the polarization beam splitter, the first light modulator including,

a first pixel display array in a first region of the first light modulator, and

a first pixel memory array in a second region substantially not overlapping the first region of the first light modulator, such that at least a plurality of pixel memory cells of the first pixel memory array lie outside the first region of the first light modulator and the first and second regions are not physically coupled.

35[[51]]. (Currently Amended) The projection device of claim 34[[50]] further comprising:

a second light modulator coupled in optical contact with the polarization beam splitter, the second light modulator including,

a second pixel display array in a first region of the second light modulator, and a second pixel memory array in a second region substantially not overlapping the first region of the second light modulator, such that at least a plurality of pixel memory cells of the second pixel memory array lie outside the first region of the second light modulator.

36[[60]]. (Currently Amended) A spatial light modulator comprising:

a display array having display pixels; and

a memory array having pixel value storage cells each associated with a corresponding one of the display pixels, wherein at least some of the storage cells are located outside the display array and are physically decoupled from the display array.

37[[61]]. (Currently Amended) The spatial light modulator of claim 36[[60]] wherein:

all of the storage cells are located outside the display array.

38[[62]]. (Currently Amended) The spatial light modulator of claim 36[[60]] further comprising:

at least one comparator coupled to compare a counter value against a pixel value from one of the pixel storage cells.

39[[63]]. (Currently Amended) The spatial light modulator of claim 38[[62]] wherein:

the at least one comparator comprises a plurality of comparators, each uniquely associated with a respective one of the pixel value storage cells.

40[[64]]. (Currently Amended) The spatial light modulator of claim 38[[62]] wherein:

the at least one comparator comprises a plurality of comparators, each uniquely associated with a respective group of the pixel value storage cells.

41[[65]]. (Currently Amended) The spatial light modulator of claim 39[[63]] wherein:

each respective group of the pixel value storage cells comprises one of a row and a column of the pixel value storage cells; and

each of the plurality of comparators is configured for time slice multiplexing comparisons of the counter value against respective values stored in the individual ones of its associated row or column of pixel value storage cells.

42[[66]]. (Currently Amended) The spatial light modulator of claim 38[[62]] wherein:

the at least one comparator comprises exactly one comparator, which is configured for time slice multiplexing comparisons of the counter value against each of the pixel value storage cells.

43[[67]]. (Currently Amended) The spatial light modulator of claim 38 [[62]] wherein:

the at least one comparator is disposed outside the display array.

44[[70]]. (Currently Amended) An article of manufacture comprising:

a machine-accessible medium including data that, when accessed by a machine system, cause the machine system to construct the apparatus of claim 10 as a monolithic integrated circuit device.

45[[71]]. (Currently Amended) The article of manufacture of claim 44[[70]] wherein the machine-accessible medium further includes data that, when accessed by the machine system, cause the machine system to construct the apparatus of claim 13 as a monolithic integrated circuit device.

46[[80]]. (Currently Amended) An article of manufacture comprising:

a machine-accessible medium including data that, when accessed by a machine system, cause the machine system to perform the method of claim 21 [[30]].

47[[81]]. (Currently Amended) The article of manufacture of claim 46 [[80]] wherein the machine-accessible medium further includes data that, when accessed by the machine system, cause the machine system to perform the method of claim 22 [[31]].